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on September 6, 2007.

PATENT  
Docket No.: 016301-078410US

TOWNSEND and TOWNSEND and CREW LLP

By: \_\_\_\_\_

  
Bonnie Rickles

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of:

Kaushal Singh et al.

Application No.: 10/688,797

Filed: October 17, 2003

For: SILICON-CONTAINING LAYER  
DEPOSITION WITH SILICON  
COMPOUNDS

Confirmation No.: 9712

Examiner: KUNEMUND, ROBERT M

Art Unit: 1722

COMMUNICATION AND REQUEST  
FOR TERMINATION OF A  
SUSPENSION OF ACTION

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

On June 8, 2007 the Office mailed a communication granting a suspension of prosecution in the above identified patent application and setting a three month period (*i.e.*, September 8, 2007) for the Applicants to request a continuance of prosecution or a further suspension of action. The Applicants now request a termination of the suspension of action in the patent application.

During the suspension period, an investigation of the inventorship of the application was conducted in response to inventorship questions raised by Dow Corning Corporation. The findings and conclusions of that investigation are present below, and Applicants request the Office acknowledge that it has read and considered them in the next Office Action.

Report on Inventorship Questions Raised by Dow Corning Corporation in  
U.S. Patent App. Ser. No. 10/688,797

Following the publication of the present application, Dow Corning Corporation notified Applied Materials, Inc. that it believed one or more Dow Corning employees contributed to subject matter claimed in the application. Specifically, Dow Corning alleged its employees disclosed certain compounds that contributed to the enablement of the invention to at least one of the named Applied Materials inventors at an October 7, 2003 meeting. However, Dow Corning did not identify the names of its employees alleged to have made the disclosure.

Following unsuccessful attempts to work with Dow Corning in investigating inventorship, Applied Materials petitioned to withdraw the patent from issuance and temporarily suspend prosecution in order to conduct an internal inventorship investigation. The investigation revealed evidence that Applied Materials employees conceived of the use of the chemical compounds in question for low temperature epitaxial Si and SiGe layer depositions long before the October 7, 2003 meeting. Applied Materials believes this evidence is definitive that the named inventors should be the only inventors listed on the present application.


The present application was filed with a priority claim to U.S. Prov. Pat. App. Ser. No. 60/419,376, filed October 18, 2002, which was almost a year before the meeting where Dow Corning alleges its employees disclosed the use of neopentasilane to the Applied Materials inventors. Dow Corning acknowledged that the '376 provisional application disclosed genus structures encompassing both compounds, but argued that since those structures also covered possibly hundreds of other compounds the Dow Corning employees provided the motivation to use neopentasilane specifically for low temperature epitaxial Si and SiGe layer depositions.

Applied Materials then looked at the invention disclosures that formed the basis for the '376 provisional patent application. A redacted copy of one of these disclosures (enclosed herewith) shows on Page 5 the specific disclosure of chemical

formula for neopentasilane, "Si(-SiH<sub>3</sub>)<sub>4</sub>", as a proposed precursor for low temperature epi deposition. This disclosure was faxed to outside patent counsel prior to the preparation and filing of the '376 provisional patent application.

Applied Materials believe this is definitive evidence that the inventors conceived of neopentasilane specifically as a promising Si precursor for low temperature epitaxial Si and SiGe layer depositions prior to the filing of the '376 provisional patent application. In view of this evidence and the filing of the '376 application, Applied Materials has concluded that the named inventors conceived of the use of neopentasilane as a Si precursor for low temperature epitaxial Si and SiGe layer depositions well before the compound was allegedly suggested to the inventors by Dow Corning's employees. After informing Dow Corning of these findings, Applied Materials has not received any evidence or arguments from Dow Corning refuting this conclusion. Accordingly, Applied Materials has closed its inventorship investigation and believes the named inventors should be the only inventors listed on the present application.

Respectfully submitted,



Eugene J. Bernard  
Reg. No. 42,320

TOWNSEND and TOWNSEND and CREW LLP  
Two Embarcadero Center, Eighth Floor  
San Francisco, California 94111-3834  
Tel: (415) 576-0200  
Fax: (415) 576-0300  
Attachments  
GB:bhr

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APPLIED MATERIALS

Re: Applied Materials, Inc. Docket No.: 007730 / TCG/EPI /LE

**\*\* PLEASE USE THE ABOVE DOCKET NUMBER ON ALL CORRESPONDENCE\*\***

Title: LOW TEMPERATURE SILICON, GERMANIUM, AND SILICON GERMANIUM DEPOSITION  
PRECURSORS FOR BLANKET AND SELECTIVE SINGLE WAFER PROCESSING,  
PENTAATOMIC ANALOGS

Inventors: Paul B COMITA , Lance A SCUDDER , David K CARLSON

Please prepare a patent application for filing in the U.S. in connection with the above-identified docket.  
Please commence with the preparation of the application at your earliest convenience. I am enclosing  
a copy of the above-identified disclosure, with the confirmation copy of this e-mail.

Please discuss this invention with the inventors within 7 days of receipt of this letter to let them know you are  
working on this case. Subsequently, please meet with them within 21 days.

We would like to have this case on file with the PTO within three months.

1. Please prepare this U.S. application in PCT format.

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Thank you very much for your assistance with this U.S. patent application.

Sincerely,  
APPLIED MATERIALS, INC.

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## INVENTION ALERT FORM

To:  
Extension:

M/S:  
FAX:

ALERT No. **0007730**  
Date:

Business Group/Cost Center Table

Select one Division	Select one Cost Center	[Optional] Select one of the following modules
<input checked="" type="checkbox"/> TCG		

Please use separate attachments for any answers that don't fit on the form, especially for questions . If the answer to a question is "NONE", please write "NONE" rather than leaving the answer blank.

Title of Invention (if handwritten, please print clearly):  
Low Temperature Silicon, Germanium, and Silicon Germanium Deposition Precursors for Blanket and Selective Single Wafer Processing, Pentaatomic Analogs

Inventors-Names only-(If handwritten, please print clearly and provide complete information at Section 9.)  
Paul Comita; Lance Scudder; David Carlson

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List feature of the invention  
Describe the advantages

lower temperature than existing precursors

Describe the invention, preferably with reference to attached drawings:  
The invention is the penta-atomic analog of the binary disilane precursors. They will be less volatile, but may be more reactive, and decompose at lower temperature. The carbon analogs of these have been disclosed publicly. See attached papers. The newly proposed materials are as follows:

$\text{Si}(\sim\text{SiH}_3)_4$   
 $\text{Si}(\sim\text{SiH}_2\text{Cl})_4$   
 $\text{Si}(\sim\text{SiHCl}_3)_4$   
  
 $\text{Si}(\sim\text{SiH}_3)_3\text{-SiH}_2\text{Cl}$   
 $\text{Si}(\sim\text{SiH}_3)_3\text{-SiHCl}_2$   
 $\text{Si}(\sim\text{SiH}_3)_3\text{-SiCl}_3$   
  
 $\text{Si}(\sim\text{SiH}_3)_2(\sim\text{SiH}_2\text{Cl})_2$   
etc.

There are also the halo derivatives with either Br or F, such as

$\text{Si}(\sim\text{SiH}_2\text{F})_4$   
or  
 $\text{Si}(\sim\text{SiH}_2\text{Br})_4$   
etc  
as above

There are also the Germanium derivatives:

$\text{Ge}(\sim\text{SiH}_3)_4$   
 $\text{Ge}(\sim\text{SiH}_2\text{Cl})_4$   
 $\text{Ge}(\sim\text{SiHCl}_3)_4$   
or  
 $\text{Si}(\sim\text{SiH}_3)_3\text{-GeH}_2\text{Cl}$   
 $\text{Si}(\sim\text{SiH}_3)_3\text{-GeHCl}_2$   
 $\text{Si}(\sim\text{SiH}_3)_3\text{-GeCl}_3$   
etc

There are also the carbon derivatives which would deposit SiC or SiGeC. Some of these have been disclosed. Some are proposed such as

$\text{Ge}(\sim\text{SiH}_2\text{Cl})_3\text{-CH}_3$   
 $\text{Ge}(\sim\text{SiH}_3)_3\text{-CH}_2\text{Cl}$   
etc.  
or

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$\text{Si}(\text{-SiH}_3)_3\text{-CH}_3$   
 $\text{Si}(\text{-SiH}_3)_3\text{-CH}_2\text{Cl}$   
 $\text{Si}(\text{-SiH}_3)_3\text{-GeHCl}_2$   
 $\text{Si}(\text{-SiH}_3)_3\text{-GeCl}_3$   
etc

There also may be cyclic derivatives

$\text{SiH}_2\text{-SiH}_2\text{-SiH}_2$   
 $\text{SiH}_2\text{-SiH}_2$                       or    $\text{SiH}_2\text{-SiH-SiH}_3$   
    $\text{SiH}_2\text{-SiH}_2$

etc.



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9. Provide the following information for FACH inventor

Inventor # 1					
Legal Name	Paul B. Comita				
Citizenship	USA				
Product Group	TCG				

Inventor # 2					
Legal Name	Lance Scudler				
Citizenship	USA				
Product Group	TCG				

Inventor # 3					
Legal Name	David Carlson				
Citizenship	USA				

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List words separated by spaces to be used for database search -- use those that best characterize the nature of the invention.

Keyword(s): epitaxy